



MAY 08 2003

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SHEETS WITH MARKED-UP VERSION OF CLAIMS PER 37

C.F.R. § 1.121 (c) (1) (iii)

1 3. (TWICE AMENDED) A constant-power brushless DC motor,
2 comprising:

3 a stator wound in parallel by phases and polarities
4 and configured of n multi-phases, each of the winding coils
5 of the stator which are not connected with one another is
6 connected to each of n full H-bridges, n full H-bridges are
7 connected to a DC power supply in parallel;

8 a rotor having a predetermined number of polarities,
9 which is required to concentrate magnetic flux on
10 excitation area;

11 a commutation encoder including sensing regions and
12 nonsensing regions, the commutation encoder being
13 externally set to one side of the shaft of the rotor; and
14 two photo sensors set to each phase, the two photo
15 sensors being connected to a half H-bridge of each phase,
16 to switch the half H-bridge on and off, wherein the width
17 of each of the sensing regions of the commutator encoder is
18 determined to allow a phases among n phases to be excited
19 constantly, the corresponding photo sensors recognizing the
20 a phases excited,

21 wherein the stator has narrow slots to remove flux
22 cancel phenomenon between every winding slot and to remove
23 peak current between said excited phase and said inexcited
24 phase, and

25 [The motor as claimed in claim 1,] wherein the number of
26 phases among the n phases, which will be excited, is
27 determined by the distance between the sensing regions, the
28 distance between the sensing regions being determined
29 through the following expression,

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30 width of sensing regions
31 = $(2\pi \times \text{number of phases to be excited}) / (\text{number of}$
32 polarities of rotor $\times \text{number of phases of motor})$ (°),
33 the number of sensing regions in the commutation
34 encoder being determined through the following expression,
35 number of sensing regions
36 = $(\text{number of polarities of rotor})/2$,
37 the distance between the photo sensors on a sensor
38 plate being determined by the following expression,
39 distance between photo sensors
40 = $2\pi / (\text{number of polarities of rotor} \times \text{number of phases}$
41 of motor) (°),
42 among the n phases, a phases being excited but b
43 phases not being excited all the time

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